AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) An image processing apparatus for finding reflectivity based on a ~~BRDF~~ bi-directional reflection distribution function (BRDF) model expressing a ratio of reflection of light incident upon one point of a surface of an object to be drawn at the object surface, comprising[[,]]:

a first operation means for outputting a direction of a light source and a direction of a viewpoint; and

[[an]] a second operation means for calculating said reflectivity based on a BRDF model calculated by a quadratic-form matrix expression including a vector comprised of a light source direction vector representing the direction of the light source, a viewpoint direction vector representing the direction of the viewpoint, and a normal direction vector, and a matrix determining the characteristics of the BRDF model.

2. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said vector comprised of the light source direction, the viewpoint direction, and the normal direction is ~~either~~ one of a three-dimensional vector expressing directions, a quaternion, and a pole coordinate.

3. (Original) An image processing apparatus as set forth in claim 1, wherein said vector comprised of the light source direction, the viewpoint direction, and the normal direction is obtained by regressing the order by using an appropriate linear conversion.

4. (Original) An image processing apparatus as set forth in claim 1, wherein said vector comprised of the light source direction, the viewpoint direction, and the normal direction is obtained by converting these vectors by any elementary operation, table reference, or combination of the same.

5. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means divides the matrix determining the characteristics of the BRDF model calculated by the quadratic-form matrix expression into sub matrixes and performs an evaluation operation ~~for evaluation~~ using a polynomial comprised of a quadratic form of the divided sub matrixes.

6. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means calculates a quadratic form by the procedure of multiplying the matrix ~~and~~ with the vectors, then multiplying the vectors with each other.

7. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means combines evaluation results of one or more of said BRDF models by selectively using addition/subtraction, multiplication, division, cumulative multiplication, and the quadratic form.

8. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means has a composite operation unit for calculating said BRDF model having two operation modes of a matrix operation equation comprised of two different vectors and a sum of the quadratic-form matrix including a triangle matrix and vector multiplication.

9. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means gives the matrix determining the characteristics of said BRDF model using a texture map.

10. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means interpolates elements of the matrix determining the characteristics of the BRDF model based on MIPMAP processing including predetermined filtering.

11. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means refers to the matrix determining the characteristics of the BRDF model from an indexed table.

12. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means obtains the matrix determining the characteristics of the BRDF model by solving an equation comprised of a plurality of polynomials obtained by entering a plurality of BRDF raw data given in advance into said BRDF model.

13. (Currently amended) An image processing apparatus as set forth in claim 1, wherein said second operation means forms the matrix determining the characteristics of the BRDF model from the parameters of a polynomial texture map by a correspondence obtained by assuming that a diffuse reflectivity distribution corresponding to the light source direction is the same as a specular reflectivity distribution corresponding to a half vector direction.

14. (Currently amended) An image processing method for finding reflectivity based on a ~~BRDF~~ bi-directional reflection distribution function (BRDF) model expressing a ratio of reflection of light incident upon one point of a surface of a generated object at the object surface, comprising:

calculating said reflectivity based on a BRDF model calculated by a quadratic-form matrix expression including a vector comprised of a light source direction vector, a viewpoint direction vector, and a normal direction vector, and a matrix determining the characteristics of the BRDF model.

15. (Currently amended) An image processing method as set forth in claim 14, wherein said vector comprised of the light source direction, the viewpoint direction, and the normal direction is ~~either~~ one of a three-dimensional vector expressing directions, a quaternion, and a pole coordinate.

16. (Original) An image processing method as set forth in claim 14, wherein said vector comprised of the light source direction, the viewpoint direction, and the normal direction is obtained by regressing the order by using an appropriate linear conversion.

17. (Original) An image processing method as set forth in claim 14, wherein said vector comprised of the light source direction, the viewpoint direction, and the normal direction is obtained by converting these vectors by any elementary operation, table reference, or combination of the same.

18. (Currently amended) An image processing method as set forth in claim 14, comprising dividing the matrix determining the characteristics of the BRDF model

calculated by the quadratic-form matrix expression into sub matrixes and performing an evaluation operation ~~for evaluation~~ using a polynomial comprised of a quadratic form of the divided sub matrixes.

19. (Currently amended) An image processing method as set forth in claim 14, wherein said quadratic form performs calculation by the procedure of multiplying the matrix ~~and~~ with the vectors, then multiplying the vectors with each other.

20. (Original) An image processing method as set forth in claim 14, comprising combining evaluation results of one or more of said BRDF models by selectively using addition/subtraction, multiplication, division, cumulative multiplication, and the quadratic form.

21. (Original) An image processing method as set forth in claim 14, comprising calculating said BRDF model by a composite operator having two operation modes of a matrix operation equation comprised of two different vectors and a sum of the quadratic-form matrix including a triangle matrix and vector multiplication.

22. (Original) An image processing method as set forth in claim 14, comprising giving the matrix determining the characteristics of said BRDF model by using a texture map.

23. (Original) An image processing method as set forth in claim 14, comprising interpolating elements of the matrix determining the characteristics of the BRDF model based on MIPMAP processing including predetermined filtering.

24. (Original) An image processing method as set forth in claim 14, comprising referring to the matrix determining the characteristics of the BRDF model from an indexed table.

25. (Original) An image processing method as set forth in claim 14, comprising obtaining the matrix determining the characteristics of the BRDF model by solving an equation comprised of a plurality of polynomials obtained by entering a plurality of BRDF raw data given in advance into said BRDF model.

26. (Original) An image processing method as set forth in claim 14, comprising forming the matrix determining the characteristics of the BRDF model from the parameters of a polynomial texture map by a correspondence obtained by assuming that a diffuse reflectivity distribution corresponding to the light source direction is the same as a specular reflectivity distribution corresponding to a half vector direction.